DS ASSIGNMENT NO: 06 B

Depth First Search (DFS)

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Date:-

PROBLEM STATEMENT : Depth First Search (DFS):

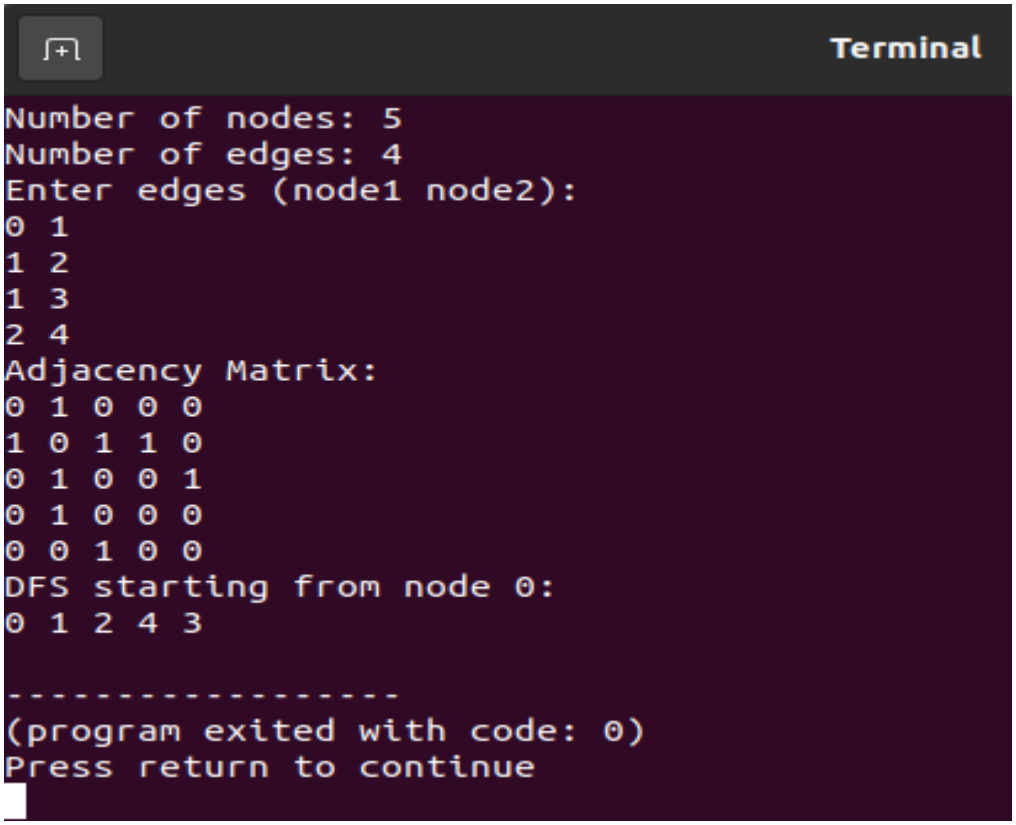
Application: Web crawlers use DFS to explore web pages systematically, following links and indexing content for search engines. Write a simple program to index web pages using Depth First Search (DFS). The program should simulate a web graph where pages are represented as nodes and hyperlinks as edges.

CODE

```
#include <iostream>
using namespace std;

int adj[10][10], n;
char visited[10];
// 'F' for unvisited, 'T' for visited

void dfs(int v) {
    visited[v] = 'T';
    cout << v << " ";

    for (int i = 0; i < n; i++) {
        if (adj[v][i] == 1 && visited[i] == 'F') {
            dfs(i);
        }
    }
}

int main() {
    int edges;
    cout << "Number of nodes: ";
    cin >> n;
    cout << "Number of edges: ";
```

```
    cin >> edges;

    for (int i = 0; i < n; i++) {
        visited[i] = 'F';
        for (int j = 0; j < n; j++) {
            adj[i][j] = 0;
        }
    }

    cout << "Enter edges (node1 node2):\n";
    for (int i = 0; i < edges; i++) {
        int u, v;
        cin >> u >> v;
        adj[u][v] = 1;
        adj[v][u] = 1;
    }

    cout << "Adjacency Matrix:\n";
    for (int i = 0; i < n; i++) {
        for (int j = 0; j < n; j++) {
            cout << adj[i][j] << " ";
        }
        cout << "\n";
    }

    cout << "DFS starting from node 0:\n";
    dfs(0);

    return 0;
}
```

OUTPUT


Terminal
Number of nodes: 5
Number of edges: 4
Enter edges (node1 node2):
0 1
1 2
1 3
2 4
Adjacency Matrix:
0 1 0 0 0
1 0 1 1 0
0 1 0 0 1
0 1 0 0 0
0 0 1 0 0
DFS starting from node 0:
0 1 2 4 3

(program exited with code: 0)
Press return to continue